

Date: Monday, 1/30/2006 8:08:34 AM
 User: Kim Johnston

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: 02.750 SUPPORT
Job Number	: 25657		
Estimate Number	: 10829		
P.O. Number	: N/A	Part Number	: D28931
This Issue	: 1/30/2006 S.O. No.: N/A	Drawing Number	: D2893 REV A1
Prsht Rev.	: NC	Project Number	: N/A
First Issue	: N/A Type : MACHINED PARTS	Drawing Revision	: A1
Previous Run	: 24852	Material	: N/A
Written By	: <u>SEE COMMENT BELOW</u>	Due Date	: 2/20/2006 Qty: 15 Um: Each
Checked & Approved By	: <u>06.01.30</u>		
Comment	: Est: C 02.11.26 Reformat; Added P/O KJ		

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
---------	-----------------------	---------------

1.0

PG

PURCHASING



Comment: PURCHASING

Issue P/O: 00000467 06/01/30

Description: D6104-005

Material: 17-4 PH SS (AMS 5643 OR AISI 630) as per Dwg D6104

Material release note required.

2.0

D28931

Support



Comment: Qty.: 0.0000 Each(s)/Unit Total : 0.0000 Each(s)
 Support

3.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive & Inspect for Transit Damage

Ensure Material Release Note is attached

06/2/8 (15)

4.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



PG

Issue P.O for turning only



Comment: MORI SEIKI CNC LATHE LARGE

Turn blank for Haas as per Folio FA081

P.O. 684

u 06/03/01

PG Receive & Inspect for transit damage 06/03/01 (15)

5.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

Er 06/04/06

15

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☐ No ☒ DQA: ☒ Date: 06/04/24
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Monday, 1/30/2006 8:08:34 AM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 02.750 SUPPORT

Job Number: 25657

Part Number: D28931

Job Number:



Seq. #:

Machine Or Operation:

Description:

6.0

BAND SAW

BAND SAW



Comment: ~~BAND SAW~~ Haas
Machine as per Folio FA081
Tumble & Deburr

in/5.5

06/04/05

15

7.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

5.5 / in

06/04/10

15

8.0

QC8

SECOND CHECK



Comment: SECOND CHECK

mk

06/04/11

15

9.0

HAND FINISHING

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1
Acid etch and Alodine as per QSI 005 4.1

ya right

DC 06/04/19

(15)

10.0

POWDER COATING

POWDER COATING



Comment: POWDER COATING
Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3

DC

06/04/19

(15) set

11.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT

06/4/24

(30) mcp

12.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1
Identify and Stock
Location: ST 166

06/4/24

(30) mcp

13.0

DC

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL
Inspection Level 21

06/04/24

Job Completion



06-04-24

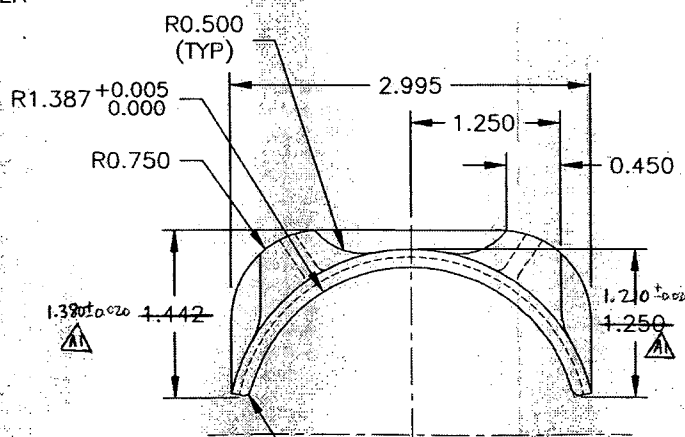
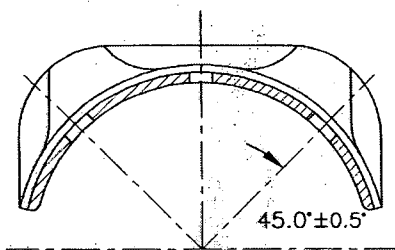
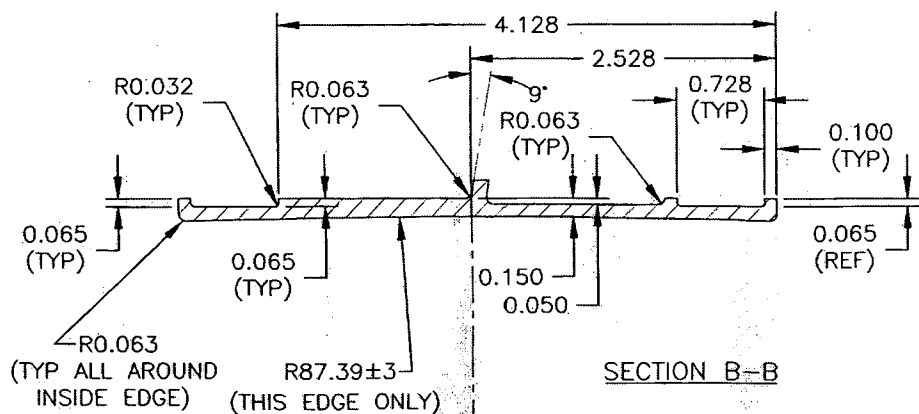
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

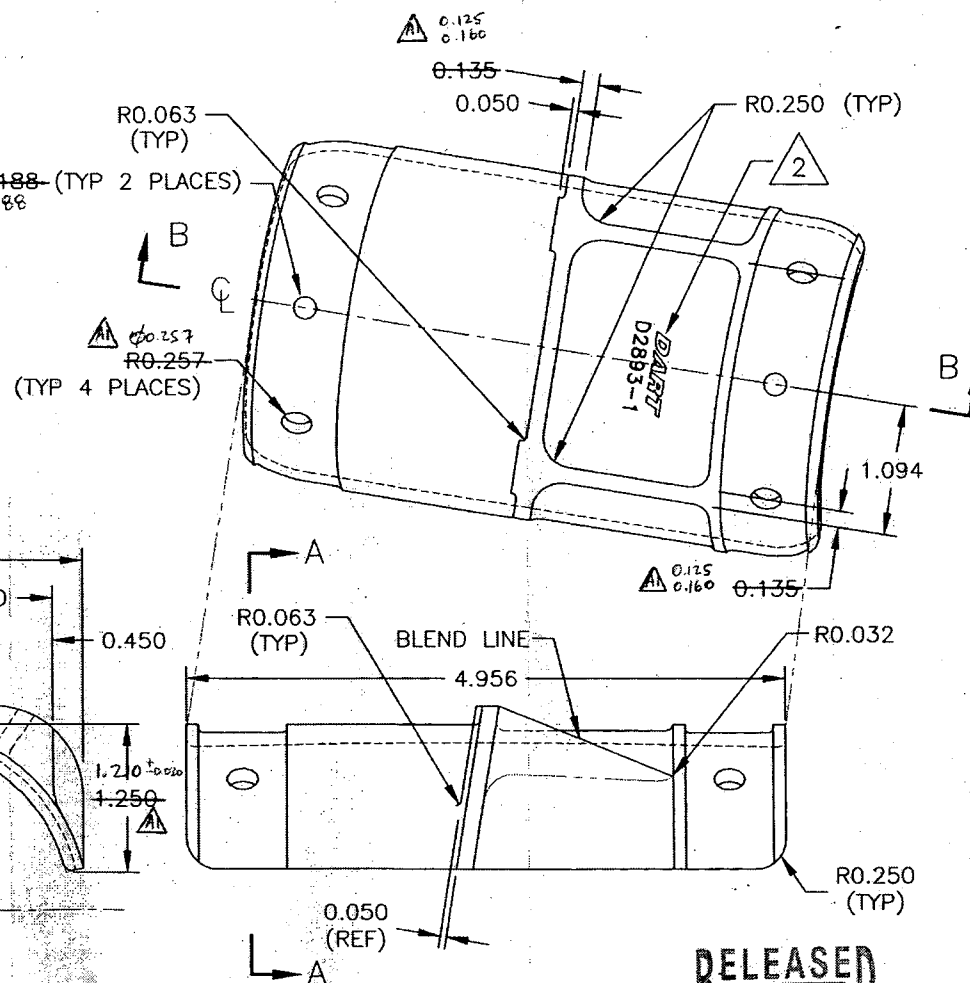
NOTE: Date & initial all entries



R0.063 (REF)

NO. 25657
WORK ORDER

UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
ENGINEERING
RETURN TO
SHOP COPY



D2893-1

- 1) MATERIAL: 17-4 PH STAINLESS STEEL
HEAT TREAT TO H900 CONDITION
(900°F FOR 1 HR, AIR COOL)
MIN UTS = 170 KSI (38 HRC)
- 2) IDENTIFY WITH DART LOGO AND PART NUMBER IN
THIS AREA WITH 0.125 HIGH LETTERING 0.010-0.020 DEEP
- 3) BREAK ALL UNMARKED SHARP EDGES 0.010 TO 0.020
- 4) PART IS SYMMETRIC ABOUT CENTERLINE
- 5) TOLERANCES ARE PER DART QSI 010 UNLESS OTHERWISE NOTED
- 6) ALL DIMENSIONS ARE IN INCHES
- 7) FINISH: POWDER COAT WHITE (REF. 4.3.5.2) PER DART QSI 005 4.3

RELEASED
01.01.11

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AND IS SUPPLIED ON THE EXPRESS CONDITION
THAT IT IS NOT TO BE USED FOR ANY PURPOSE
OR COPIED OR COMMUNICATED TO ANY OTHER
PERSON WITHOUT WRITTEN PERMISSION FROM
DART AEROSPACE LTD.

AI	CP	02.01.23	UPDATE DIMS AS MANUFACTURED.	REV. A
A		01.01.10	NEW ISSUE	
DESIGN	CP	DRAWN BY	DART DART AEROSPACE LTD. HAMPSHIRE, ENGLAND, CANADA	REV. A
CHECKED	RT	APPROVED	DRAWING NO. D2893	SHEET 1 OF 1
DATE	01.01.10	TITLE	Ø2.750 SUPPORT	SCALE 1:1

COPPER AND BRASS SALES

MATERIAL TYPE STAINLESS STEEL

AISI SERIES
200 300 400
AND
PRECIPIT HARDENING GRADES

"WARNING"

INHALATION OF FUMES, FRESHLY GENERATED BY THE WELDING OF STAINLESS STEEL CONTAINING ONE OR MORE OF THE FOLLOWING INGREDIENTS, ZINC, MAGNESIUM OR COPPER, ARE KNOWN TO CAUSE METAL FUME FEVER. INHALATION OF DUST OR FUME FROM STAINLESS STEEL CONTAINING ONE OR MORE OF THE FOLLOWING INGREDIENTS, ALUMINUM, IRON, MANGANESE, SELENIUM, OR TIN, HAS ALSO BEEN REPORTED TO CAUSE METAL FUME FEVER AND MAY CAUSE IRRITATION TO THE RESPIRATORY TRACT AND/OR AGGRAVATE PRE-EXISTING CONDITIONS. TARGET ORGAN IS PRIMARILY THE LUNG.

THIS PRODUCT CONTAINS CHROMIUM. EXPOSURE TO CHROMIUM DUST OR FUME MAY CAUSE METAL FUME FEVER WITH FLU-LIKE SYMPTOMS AND KIDNEY AND LIVER DAMAGE. UNDER HIGH TEMPERATURES, HEXAVALENT CHROMIUM MAY BE PRODUCED. IF IN THE INSOLUBLE FORM, IT IS A CONFIRMED HUMAN CARCINOGEN. THIS PRODUCT MAY ALSO CONTAIN NICKEL AND COBALT. INHALATION OF NICKEL OR COBALT DUST OR FUME MAY RESULT IN INFLAMMATION OF THE RESPIRATORY TRACT. NICKEL AND COBALT HAVE BEEN IDENTIFIED AS POTENTIAL HUMAN CARCINOGENS.

IF COATED WITH OIL, MAY CAUSE SKIN IRRITATION/DERMATITIS BY CONTACT. WELDING FUME IS LISTED AS A POSSIBLE CARCINOGENIC TO HUMANS.

READ THE STAINLESS STEEL MATERIAL SAFETY DATA SHEET (MSDS) ON FILE WITH YOUR EMPLOYER BEFORE WORKING WITH THIS MATERIAL

- * If processing or recycling produces particulate, use exhaust ventilation or other controls designed to prevent exposure to workers. Examples of such activities include melting, welding, grinding, abrasive sawing, sanding and polishing. Any activity which abrades the surface of this material can generate airborne particulate. Use respiratory protection (P100, quantitative fit testing required) if exposures exceed the permissible limits.
- * The Occupational Safety and Health Administration (OSHA) have set mandatory limits on occupational exposures.
- * Stainless Steel, in solid form and as contained in finished products presents no special health risk.
- * Sold for manufacturing purposes only. This product can be recycled; contact your sales representative.

The Occupational Safety and Health Administration require employers to provide training in the proper use of this product.

For additional information, call or write to Copper and Brass Sales, 22355 West Eleven Mile Road, Southfield, MI 48034, telephone 248-233-5600, or visit our web site @ www.copperandbrass.com.



Certificate of Test



* CERTIFICATION *

HEAT 64305

ORDER 0470451/001 SON 63205/1 BOL 0134430 TAG 1742289 11/18/05

SHIP TO:
COPPER & BRASS SALES
6555 EAST DAVISON

DETROIT

MI 48212

CC8199

11/18/05 YOUR ORDER & DATE

CUST# COPBRA01

CUST TAG#408860-5

GRADE 17-4

ITEM DESCRIPTION

Size 17-4 HRART RND BAR 4 STD
Ship Condition A

Country of Melt: BRI

Country of Mfg.: BRI

NAFTA Country of Origin is Country of Melt

Total Bundles 1

SON Weight 2700

SPECIFICATIONS

AMS 2303E
ASME SA564 E01
DIN 50049/EN 10204 3.1B
COPPER & BRASS 17-4 PH MAXX
ASTM A564 04 TYPE 630
FREE OF MERCURY CONTAMINATION

AMS 5643Q
ASTM A484 03A
AISI 630, UNS S17400
MAXX STAINLESS STEEL BAR
NO WELD REPAIR

MECHANICAL & OTHER TESTS

Test Condition A

Hardness as shipped (311 HBW)

Hardness as shipped 31 HRC

Grain size 8.0

Micro OK

Intergranular corrosion OK

Macro OK

Ferrite

10.5

Hardness as tested (444 HBW)

Hardness as tested 47 HRC

Tensile strength, KSI (MPa) 208.7 (1439)

0.2% Yield Strngth, KSI (MPa) 181.9 (1254)

Elongation % in 4D 19.0

Reduction of area % 47.5

Hardenability

HRC 47

CHEMICAL COMPOSITION

Carbon (C) .044
Phosphorus (P) .020
Silicon (Si) .350
Nickel (Ni) 4.270
Moly (Mo) .110
Columbium (Cb) .290
Tin (Sn) .006
Columbium/
Tantalum (Cb+Ta) .290
Iron (Fe) Balance
Frequency .000
Melt Practice EAF
Refining Practice AOD
De-long Ferrite .0

Manganese (Mn) .840
Sulphur (S) .001
Chromium (Cr) 15.830
Copper (Cu) 3.370
Nitrogen (N) .044
Aluminum (Al) .027
.000

Severity .000

Knowingly & willfully falsifying or concealing a material act on this form, or making false, fictitious or fraudulent statements or representations herein could constitute a felony punishable under federal statutes.

We hereby certify that the test results shown in this report are correct and accurate as contained in the records of the company and are in compliance with the specifications, codes, and standards listed above.

M.F. Marcanio, Quality Manager

M.F. Marcanio



CERTIFICATE OF CONFORMITY

SOLD TO:

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, Ont.
K6A 1K7

SHIPPED TO:

same

<u>QUANTITY</u>	<u>PART NUMBER</u>	<u>PART NAME</u>	<u>P.O. NUMBER</u>
36	DSK081	Support as per Dwg D2940-1	0684
15	DSK078	Support as per Dwg D2943-1	0684

MATERIAL: supplied by DART

We hereby certify that the above parts were made in conformance with applicable drawings.

METEC Metal Technology Inc.

Shigi (Regula) Walz

Vankleek Hill, March 20, 2006

DART AEROSPACE LTD	Work Order: 25657
Description: Ø2.750 Support	Part Number: D2893-1
Inspection Dwg: D2893 Rev. A1	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev A1/DSK078 Rev A and record below:

Dim	Min	Max	Go/No Go Gauge	Recorded Actual Dimensions				By	Date
				1	2	3	4		
Lathe Section									
A	2.707	2.712		2.712	2.712	2.712	2.712	} In 06/04/07	
B	4.946	4.966		4.957	4.957	4.957	4.955		
C	3.064	3.084		3.076	3.076	3.074	3.073		
D	0.718	0.738		0.728	0.728	0.727	0.725		
E	0.090	0.110		0.101	0.100	0.098	0.100		
F	2.934	2.954		2.947	2.947	2.947	2.944		
G	2.166	2.186		2.177	2.177	2.177	2.176		
H	3.890	3.910		3.898	3.900	3.899	3.898		
I	0.914	0.934		0.912	0.911	0.912	0.922		
J	0.022	0.042		0.032	0.032	0.032	0.032		
K	0.109	0.129		0.119	0.119	0.116	0.116		
L									
HAAS Section									
AA	2.985	3.005		2.996	2.995	2.995	2.996		
AB	0.440	0.460		0.442	0.442	0.442	0.442		
AC	0.125	0.160		0.140	0.137	0.137	0.136		
AD	0.040	0.060		0.040	0.051	0.049	0.045		
AE	0.188	0.193	DT8706	0.188	0.188	0.188	0.190		
AF	0.125	0.160		0.144	0.141	0.139	0.143		
AG	0.140	0.160		0.157	0.151	0.157	0.153		
AH	1.360	1.400		1.390	1.378	1.384	1.391		
AI	0.040	0.060		0.057	0.057	0.056	0.049		
AJ	1.190	1.230		1.230	1.229	1.229	1.230		
AK	0.010	0.020		0.010	0.010	0.010	0.010		
AL	0.053	0.073		0.063	0.063	0.063	0.063		
AM	0.240	0.260		0.250	0.250	0.250	0.250		
AN	2.518	2.538		2.528	2.528	2.528	2.528		
AO	84.39	90.39	DT8699						
AP	0.257	0.262	DT8683	0.257	0.258	0.257	0.258		
AQ	0.053	0.073		0.063	0.063	0.063	0.063		
AR									
AS									
Accept/Reject									

Measured by: Ep
Date: 06/04/07

Audited by: Jm
Date: 06/04/07

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	J

DART AEROSPACE LTD	Work Order: 25657
Description: Ø2.750 Support	Part Number: D2893-1
Inspection Dwg: D2893 Rev. A1	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev A1/DSK078 Rev A and record below:

Dim	Min	Max	Go/No Go Gauge	Recorded Actual Dimensions				By	Date
				5	6	7	8		
Lathe Section									
A	2.707	2.712		2.712	2.712	2.712	2.712	Ep 06/04/06	
B	4.946	4.966		4.957	4.957	4.958	4.957		
C	3.064	3.084		3.073	3.073	3.073	3.075		
D	0.718	0.738		0.725	0.726	0.727	0.727		
E	0.090	0.110		0.100	0.099	0.100	0.099		
F	2.934	2.954		2.944	2.944	2.943	2.944		
G	2.166	2.186		2.173	2.173	2.173	2.174		
H	3.890	3.910		3.903	3.901	3.900	3.902		
I	0.914	0.934		0.920	0.923	0.926	0.925		
J	0.022	0.042		0.032	0.032	0.032	0.032		
K	0.109	0.129		0.117	0.116	0.117	0.116		
L									
HAAS Section									
AA	2.985	3.005		2.994	2.996	2.997	2.997		
AB	0.440	0.460		0.447	0.442	0.445	0.443		
AC	0.125	0.160		0.132	0.138	0.140	0.141		
AD	0.040	0.060		0.046	0.043	0.043	0.045		
AE	0.188	0.193	DT8706	0.190	0.189	0.190	0.190		
AF	0.125	0.160		0.143	0.140	0.141	0.142		
AG	0.140	0.160		0.151	0.152	0.151	0.150		
AH	1.360	1.400		1.380	1.380	1.380	1.378		
AI	0.040	0.060		0.054	0.051	0.051	0.047		
AJ	1.190	1.230		1.230	1.230	1.220	1.218		
AK	0.010	0.020		0.010	0.010	0.010	0.010		
AL	0.053	0.073		0.063	0.063	0.063	0.063		
AM	0.240	0.260		0.250	0.250	0.250	0.250		
AN	2.518	2.538		2.528	2.528	2.528	2.528		
AO	84.39	90.39	DT8699						
AP	0.257	0.262	DT8683	0.257	0.258	0.258	0.258		
AQ	0.053	0.073		0.063	0.063	0.063	0.063		
AR									
AS									
Accept/Reject									

Measured by:	Ep / J.G.
Date:	06/04/09

Audited by:	Jm
Date:	06/04/11

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	

DART AEROSPACE LTD	Work Order: 25657
Description: Ø2.750 Support	Part Number: D2893-1
Inspection Dwg: D2893 Rev. A1	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev A1/DSK078 Rev A and record below:

Dim	Min	Max	Go/No Go Gauge	Recorded Actual Dimensions.				By	Date
				9	10	11	12		
Lathe Section									
A	2.707	2.712		2.712	2.712	2.712	2.712		
B	4.946	4.966		4.954	4.956	4.955	4.959		
C	3.064	3.084		3.075	3.075	3.074	3.075		
D	0.718	0.738		0.726	0.728	0.725	0.726		
E	0.090	0.110		0.100	0.100	0.101	0.099		
F	2.934	2.954		2.943	2.943	2.944	2.943		
G	2.166	2.186		2.179	2.179	2.180	2.183		
H	3.890	3.910		3.902	3.901	3.904	3.901		
I	0.914	0.934		0.925	0.928	0.925	0.925		
J	0.022	0.042		0.032	0.032	0.032	0.032		
K	0.109	0.129		0.116	0.116	0.115	0.116		
L									
HAAS Section									
AA	2.985	3.005		2.998	2.999	2.998	2.998		
AB	0.440	0.460		0.445	0.445	0.444	0.445		
AC	0.125	0.160		0.140	0.138	0.140	0.139		
AD	0.040	0.060		0.049	0.050	0.045	0.049		
AE	0.188	0.193	DT8706	0.190	0.190	0.190	0.190		
AF	0.125	0.160		0.145	0.145	0.141	0.142		
AG	0.140	0.160		0.149	0.151	0.148	0.155		
AH	1.360	1.400		1.375	1.379	1.376	1.380		
AI	0.040	0.060		0.051	0.051	0.051	0.053		
AJ	1.190	1.230		1.220	1.214	1.222	1.221		
AK	0.010	0.020		0.015	0.015	0.015	0.015		
AL	0.053	0.073		0.063	0.063	0.063	0.063		
AM	0.240	0.260		0.250	0.250	0.250	0.250		
AN	2.518	2.538		2.528	2.528	2.528	2.528		
AO	84.39	90.39	DT8699	87.39	87.39	87.39	87.39		
AP	0.257	0.262	DT8683	0.258	0.258	0.258	0.258		
AQ	0.053	0.073		0.063	0.063	0.063	0.063		
AR									
AS									
Accept/Reject									

Measured by: J.G.
Date: 06/04/09

Audited by: [Signature]
Date: 06/04/11

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	[Signature]

DART AEROSPACE LTD	Work Order: 25657
Description: Ø2.750 Support	Part Number: D2893-1
Inspection Dwg: D2893 Rev. A1	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev A1/DSK078 Rev A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	13	14	15	16	By	Date
Lathe Section									
A	2.707	2.712		2.712	2.712	2.712			
B	4.946	4.966		4.955	4.956	4.955			
C	3.064	3.084		3.073	3.073	3.074			
D	0.718	0.738		0.727	0.726	0.726			
E	0.090	0.110		0.100	0.099	0.099			
F	2.934	2.954		2.944	2.943	2.944			
G	2.166	2.186		2.180	2.172	2.174			
H	3.890	3.910		3.901	3.904	3.899			
I	0.914	0.934		0.922	0.925	0.923			
J	0.022	0.042		0.032	0.032	0.032			
K	0.109	0.129		0.117	0.116	0.116			
L									
HAAS Section									
AA	2.985	3.005		3.000	3.001	3.000			
AB	0.440	0.460		0.449	0.445	0.449			
AC	0.125	0.160		0.138	0.142	0.140			
AD	0.040	0.060		0.052	0.050	0.051			
AE	0.188	0.193	DT8706	0.190	0.190	0.190			
AF	0.125	0.160		0.143	0.144	0.142			
AG	0.140	0.160		0.152	0.150	0.150			
AH	1.360	1.400		0.1377	1.374	1.376			
AI	0.040	0.060		0.050	0.048	0.049			
AJ	1.190	1.230		1.214	1.215	1.214			
AK	0.010	0.020		0.015	0.015	0.015			
AL	0.053	0.073		0.063	0.063	0.063			
AM	0.240	0.260		0.250	0.250	0.250			
AN	2.518	2.538		2.528	2.528	2.528			
AO	84.39	90.39	DT8699	87.39	87.39	87.39			
AP	0.257	0.262	DT8683	0.258	0.258	0.258			
AQ	0.053	0.073		0.063	0.063	0.063			
AR									
AS									
Accept/Reject									

Measured by: J.G.
Date: 06/04/10

Audited by: [Signature]
Date: 06/04/11

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	[Signature]